

Experimental Study of the Flow Characteristics in the Grooves of Riblet

by

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Abstract

The flow characteristic on the riblet surface was studied experimentally by using riblet that has a comparatively big grooves, to investigate the mechanism of the friction drag reduction. Three Reynolds numbers equivalent to the reduction, without reduction, increase of the friction drag resistance by riblet were selected as the experimental condition. In those Reynolds number, the distribution of the velocity and turbulence intensity of the air flow were measured by the hot-wire anemometer on the surface including the inside of the grooves of riblet. As a result, it was found that the stagnation region of the flow exists within the grooves of riblet in the low Reynolds number with friction drag reduction and high velocity flow in the upper part slips the surface of the fluid in the stagnation region. This is considered as the mechanism of friction drag reduction. However, in a high Reynolds number it was shown that the stagnation region becomes narrow and the direct contact part between the flow and surface of riblet increase.

Keywords: Riblet, Groove, Air Flow, Flow Characteristic, Friction Drag Reduction, Mechanism

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